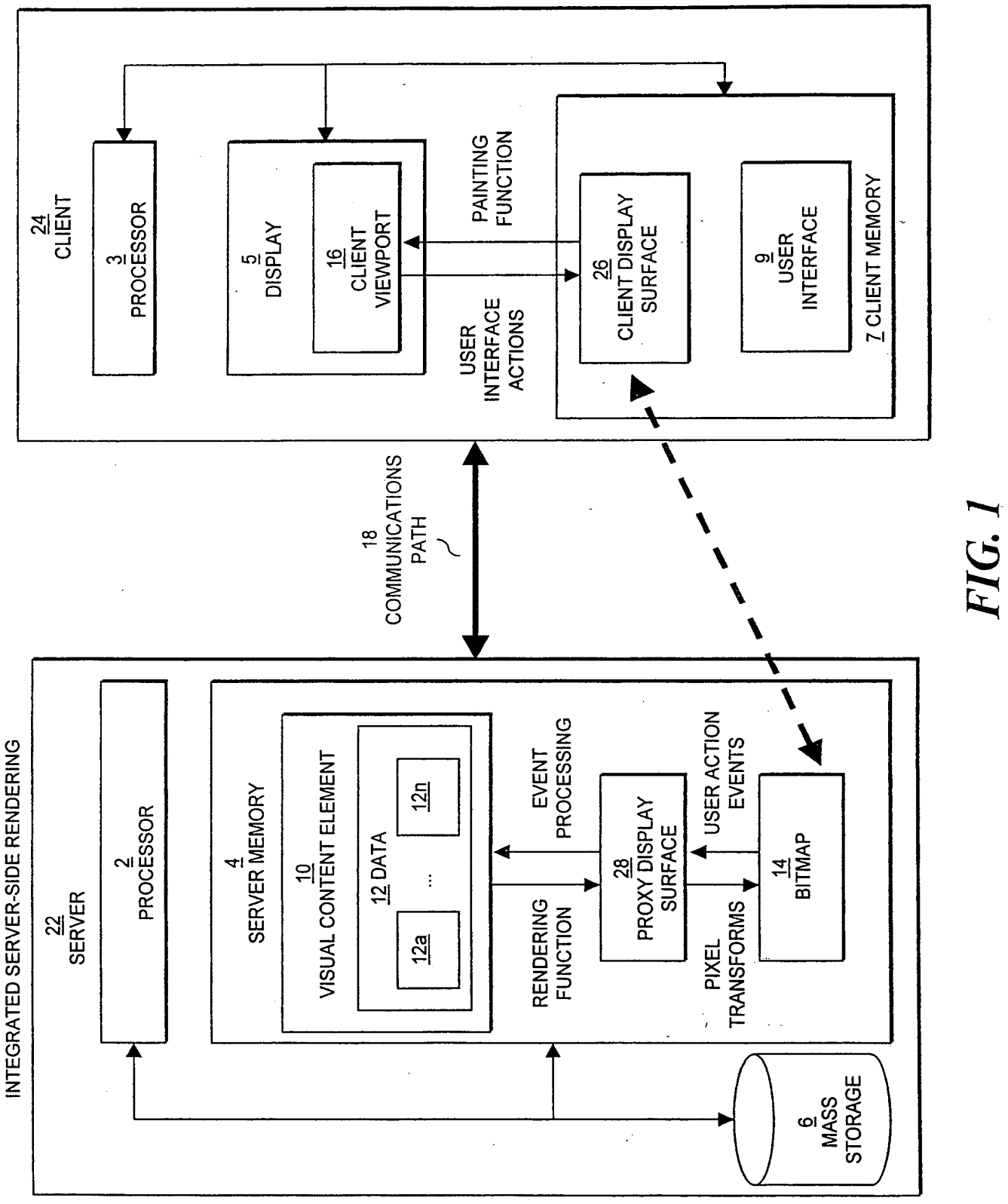

24 CLIENT
3 PROCESSOR
5 DISPLAY
16 CLIENT VIEWPORT
PAINTING FUNCTION
USER INTERFACE ACTIONS
26 CLIENT DISPLAY SURFACE
9 USER INTERFACE
7 CLIENT MEMORY
18 COMMUNICATIONS PATH
INTEGRATED SERVER-SIDE RENDERING
22 SERVER
2 PROCESSOR
4 SERVER MEMORY
10 VISUAL CONTENT ELEMENT
12 DATA
12a
12n
EVENT PROCESSING
RENDERING FUNCTION
28 PROXY DISPLAY SURFACE
USER ACTION EVENTS
PIXEL TRANSFORMS
14 BITMAP
6 MASS STORAGE

FIG. 1

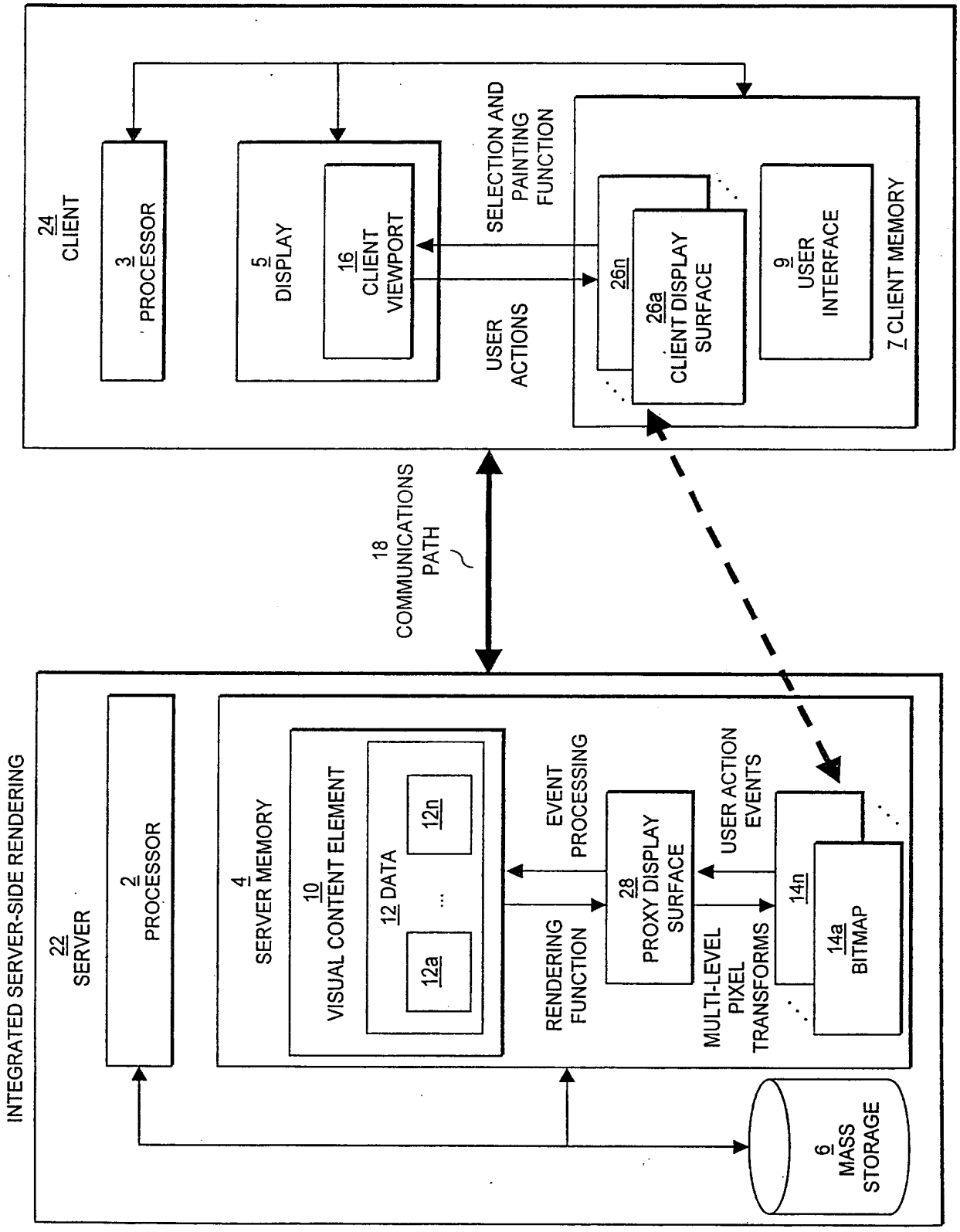

INTEGRATED SERVER-SIDE RENDERING
22 SERVER
2 PROCESSOR
4 SERVER MEMORY
10 VISUAL CONTENT ELEMENT
12 DATA
12a
12n
EVENT PROCESSING
RENDERING FUNCTION
28 PROXY DISPLAY SURFACE
USER ACTION EVENTS
MULTI-LEVEL PIXEL TRANSFORMS
14n
14a BITMAP
6 MASS STORAGE
18 COMMUNICATIONS PATH
24 CLIENT
3 PROCESSOR
5 DISPLAY
16 CLIENT VIEWPORT
SELECTION AND PAINTING FUNCTION
USER ACTIONS
26n
26a CLIENT DISPLAY SURFACE
9 USER INTERFACE
7 CLIENT MEMORY

FIG. 2

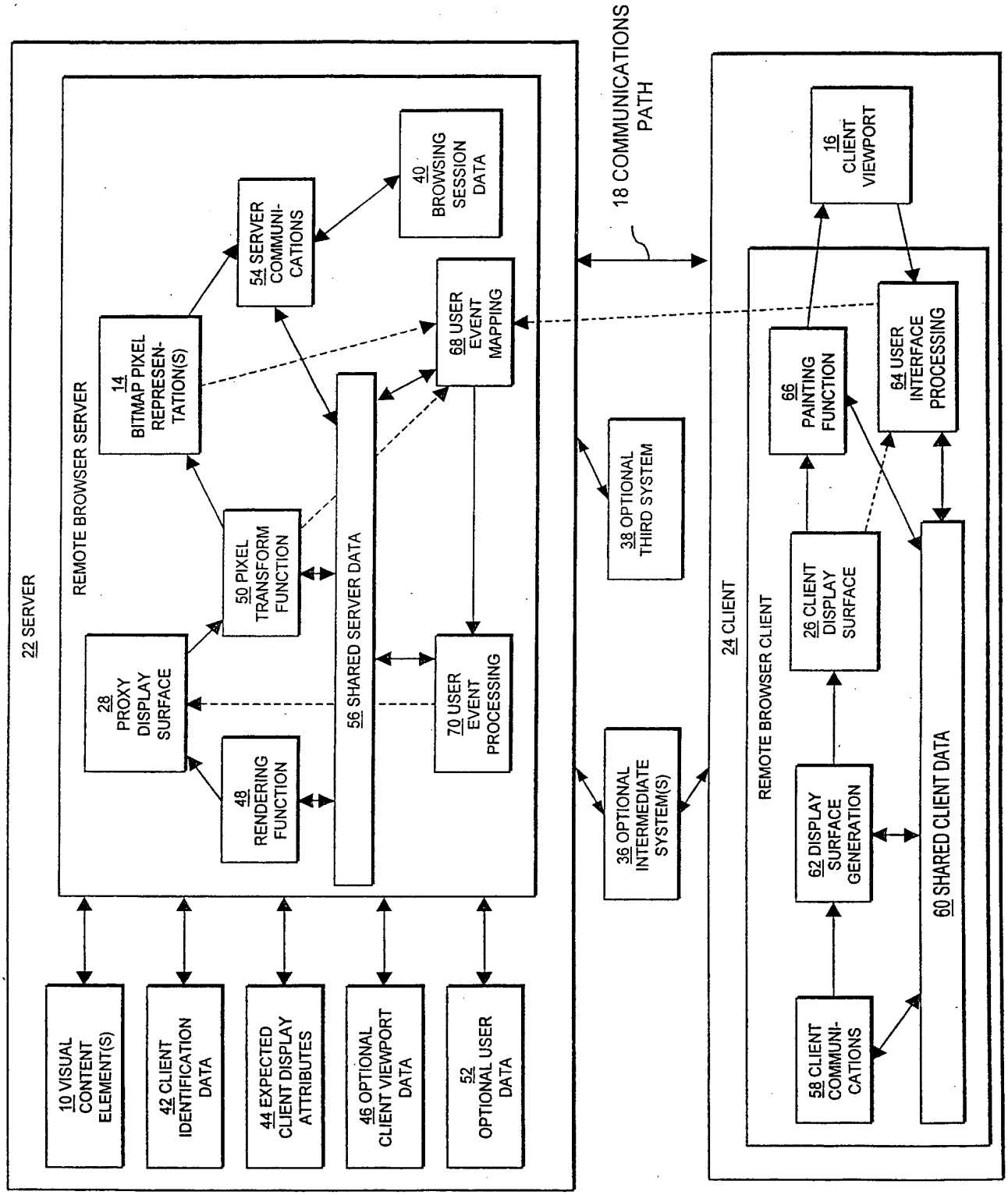

22 SERVER
REMOTE BROWSER SERVER
14 BITMAP PIXEL REPRESEN-TATION(S)
54 SERVER COMMUNI-CATIONS
40 BROWSING SESSION DATA
68 USER EVENT MAPPING
50 PIXEL TRANSFORM FUNCTION
28 PROXY DISPLAY SURFACE
48 RENDERING FUNCTION
56 SHARED SERVER DATA
70 USER EVENT PROCESSING
10 VISUAL CONTENT ELEMENT(S)
42 CLIENT IDENTIFICATION DATA
44 EXPECTED CLIENT DISPLAY ATTRIBUTES
46 OPTIONAL CLIENT VIEWPORT DATA
52 OPTIONAL USER DATA
18 COMMUNICATIONS PATH
38 OPTIONAL THIRD SYSTEM
36 OPTIONAL INTERMEDIATE SYSTEM(S)
24 CLIENT
REMOTE BROWSER CLIENT
16 CLIENT VIEWPORT
66 PAINTING FUNCTION
64 USER INTERFACE PROCESSING
26 CLIENT DISPLAY SURFACE
62 DISPLAY SURFACE GENERATION
60 SHARED CLIENT DATA
58 CLIENT COMMUNI-CATIONS

FIG. 3

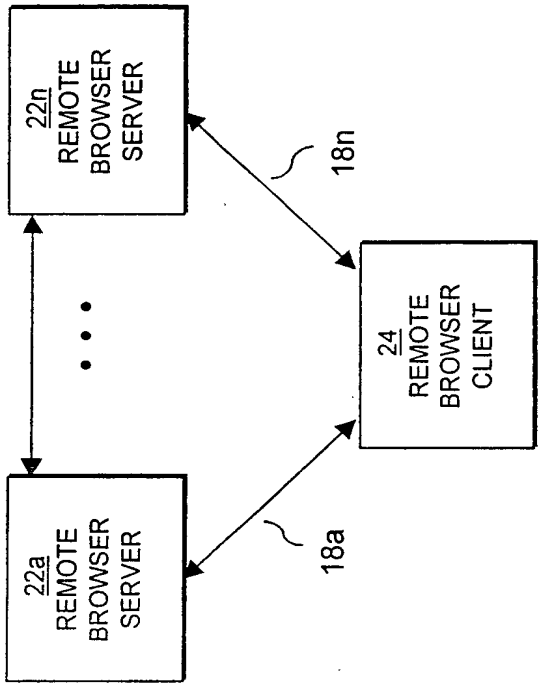

22n
REMOTE
BROWSER
SERVER
18n
24
REMOTE
BROWSER
CLIENT
22a
REMOTE
BROWSER
SERVER
18a

FIG. 5

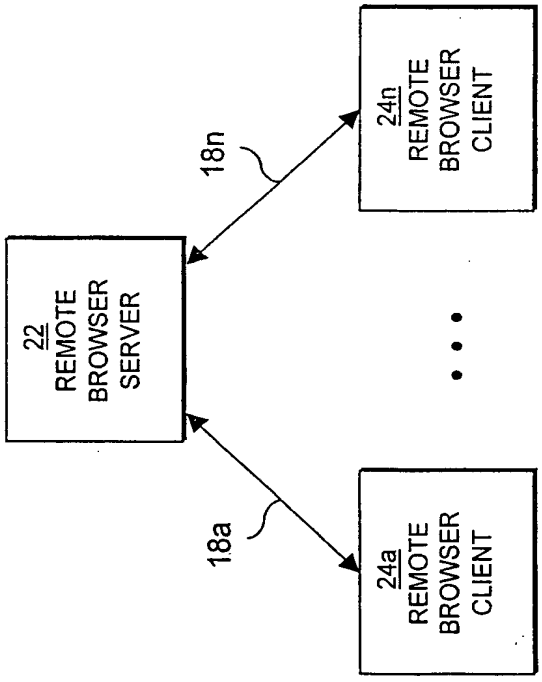

24n
REMOTE
BROWSER
CLIENT
18n
22
REMOTE
BROWSER
SERVER
18a
24a
REMOTE
BROWSER
CLIENT

FIG. 4

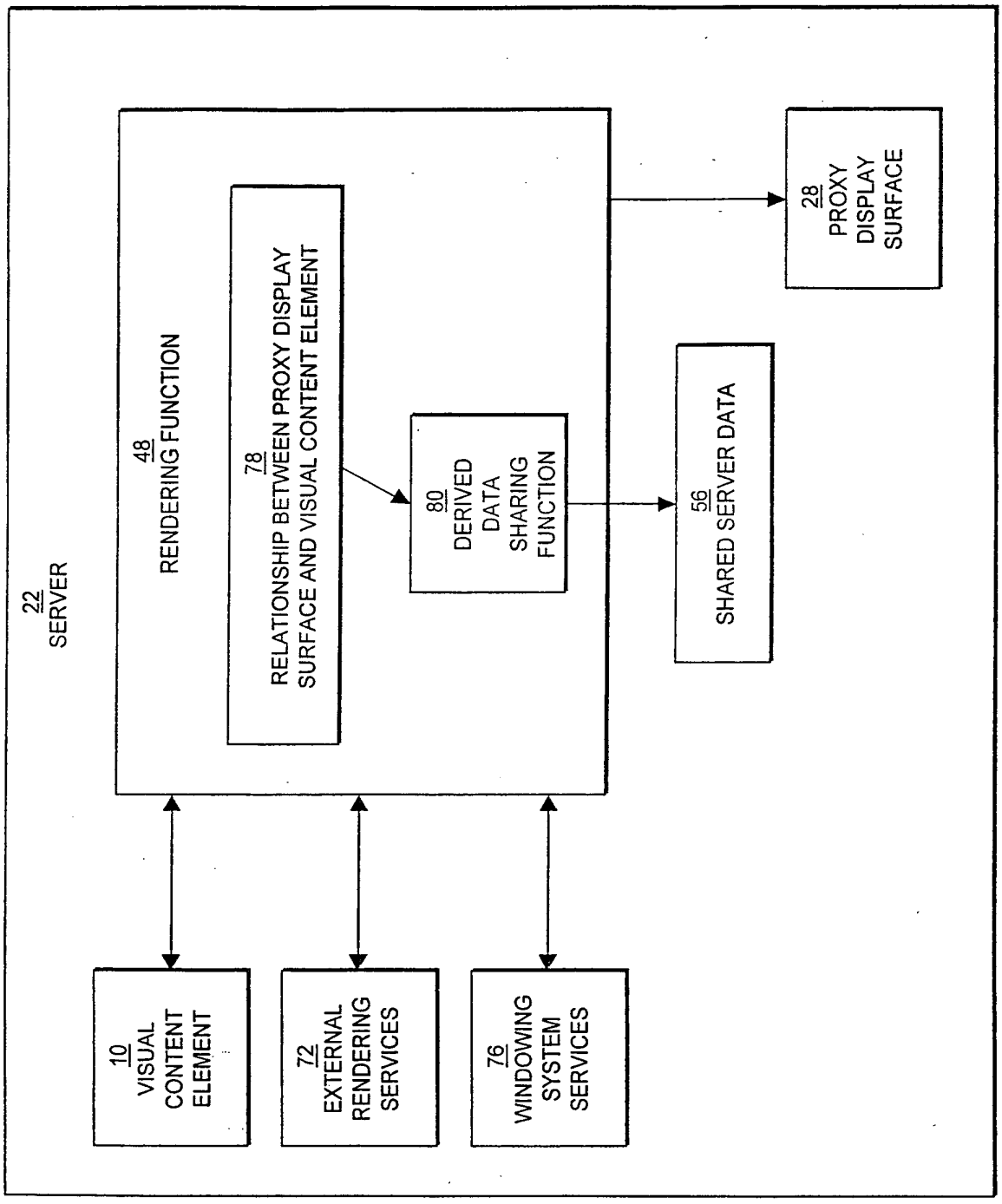

22
SERVER
48
RENDERING FUNCTION
78
RELATIONSHIP BETWEEN PROXY DISPLAY SURFACE AND VISUAL CONTENT ELEMENT
80
DERIVED DATA SHARING FUNCTION
28
PROXY DISPLAY SURFACE
56
SHARED SERVER DATA
10
VISUAL CONTENT ELEMENT
72
EXTERNAL RENDERING SERVICES
76
WINDOWING SYSTEM SERVICES

FIG. 6

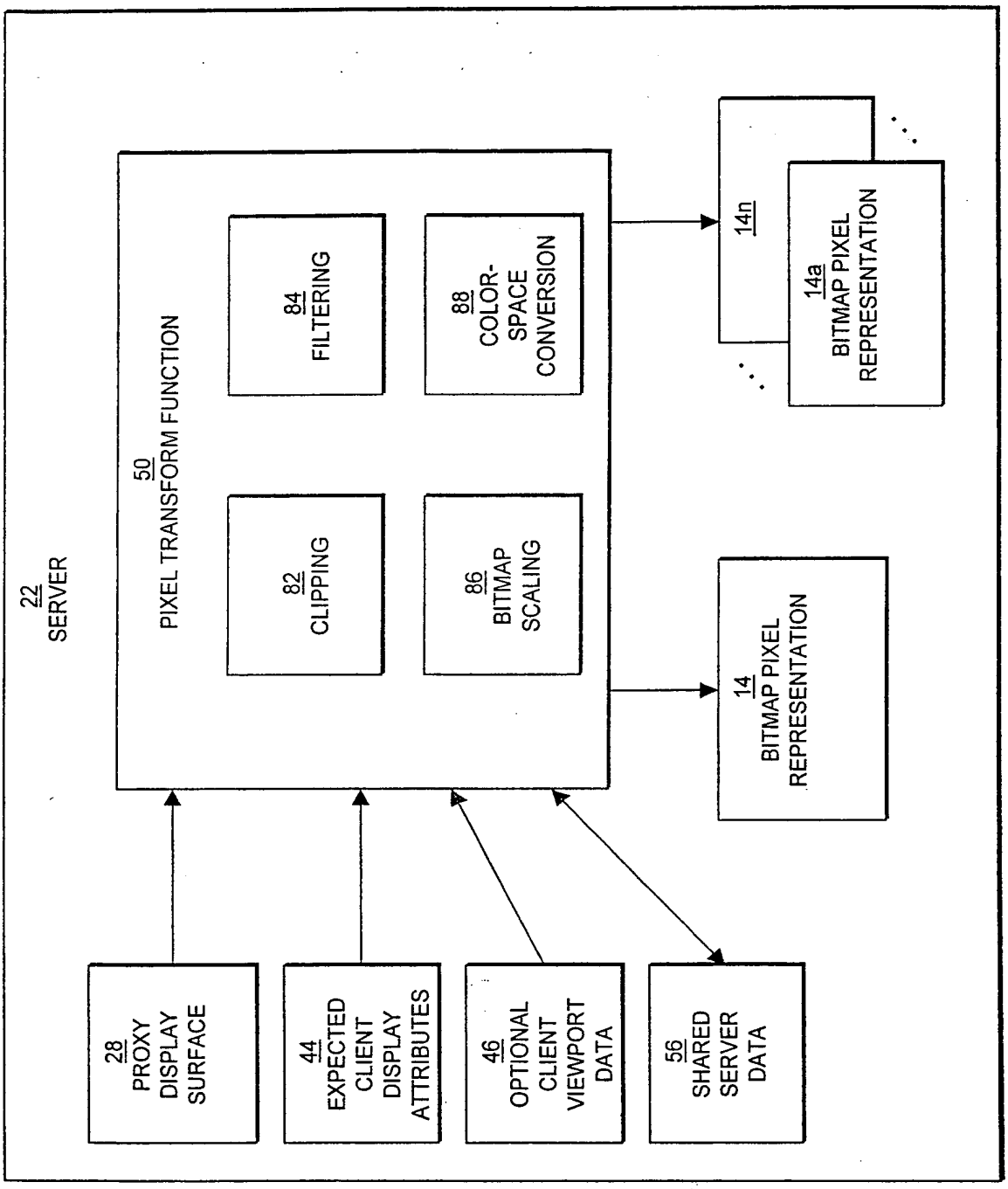

22
SERVER
50
PIXEL TRANSFORM FUNCTION
84
FILTERING
88
COLOR-
SPACE
CONVERSION
82
CLIPPING
86
BITMAP
SCALING
14n
14a
BITMAP PIXEL
REPRESENTATION
14
BITMAP PIXEL
REPRESENTATION
28
PROXY
DISPLAY
SURFACE
44
EXPECTED
CLIENT
DISPLAY
ATTRIBUTES
46
OPTIONAL
CLIENT
VIEWPORT
DATA
56
SHARED
SERVER
DATA

FIG. 7

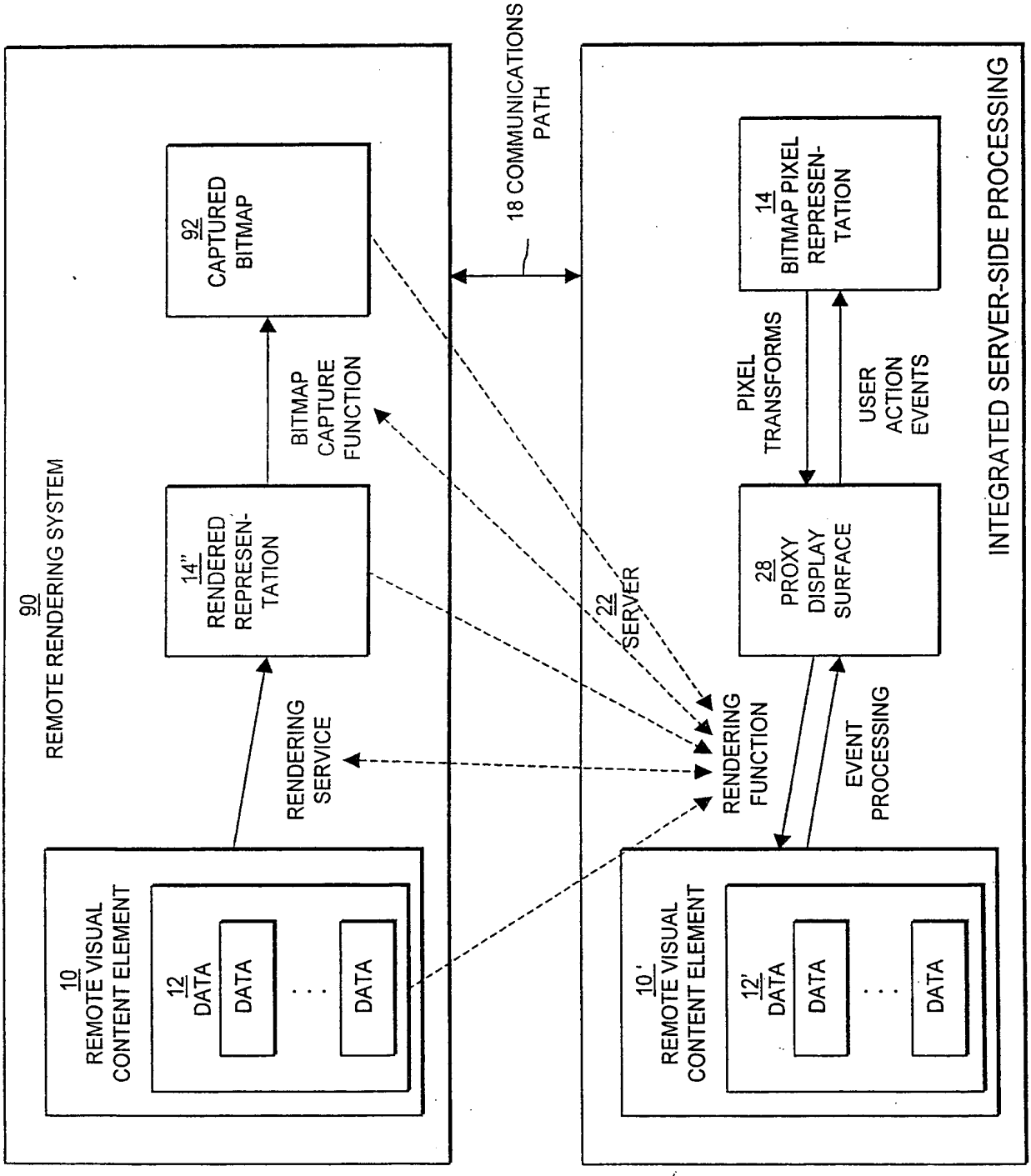

90
REMOTE RENDERING SYSTEM
10
REMOTE VISUAL CONTENT ELEMENT
12
DATA
DATA
DATA
14"
RENDERED REPRESEN-TATION
92
CAPTURED BITMAP
BITMAP CAPTURE FUNCTION
RENDERING SERVICE
18 COMMUNICATIONS PATH
22
SERVER
RENDERING FUNCTION
INTEGRATED SERVER-SIDE PROCESSING
28
PROXY DISPLAY SURFACE
14
BITMAP PIXEL REPRESEN-TATION
PIXEL TRANSFORMS
USER ACTION EVENTS
EVENT PROCESSING
10'
REMOTE VISUAL CONTENT ELEMENT
12'
DATA
DATA
DATA

FIG. 8

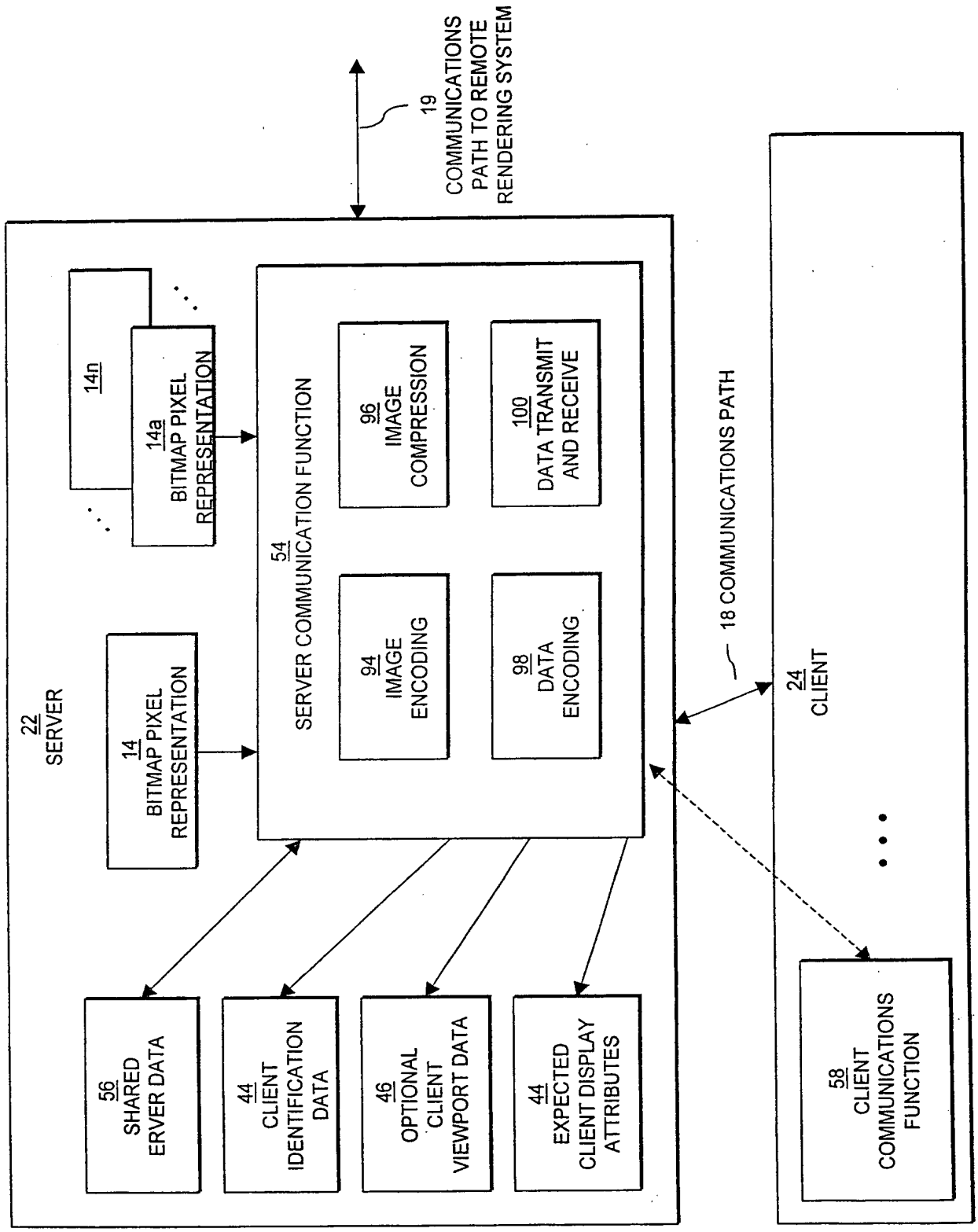

19
COMMUNICATIONS PATH TO REMOTE RENDERING SYSTEM
22
SERVER
14n
14a
BITMAP PIXEL REPRESENTATION
14
BITMAP PIXEL REPRESENTATION
54
SERVER COMMUNICATION FUNCTION
96
IMAGE COMPRESSION
100
DATA TRANSMIT AND RECEIVE
94
IMAGE ENCODING
98
DATA ENCODING
18 COMMUNICATIONS PATH
24
CLIENT
56
SHARED ERVER DATA
44
CLIENT IDENTIFICATION DATA
46
OPTIONAL CLIENT VIEWPORT DATA
44
EXPECTED CLIENT DISPLAY ATTRIBUTES
58
CLIENT COMMUNICATIONS FUNCTION

FIG. 9

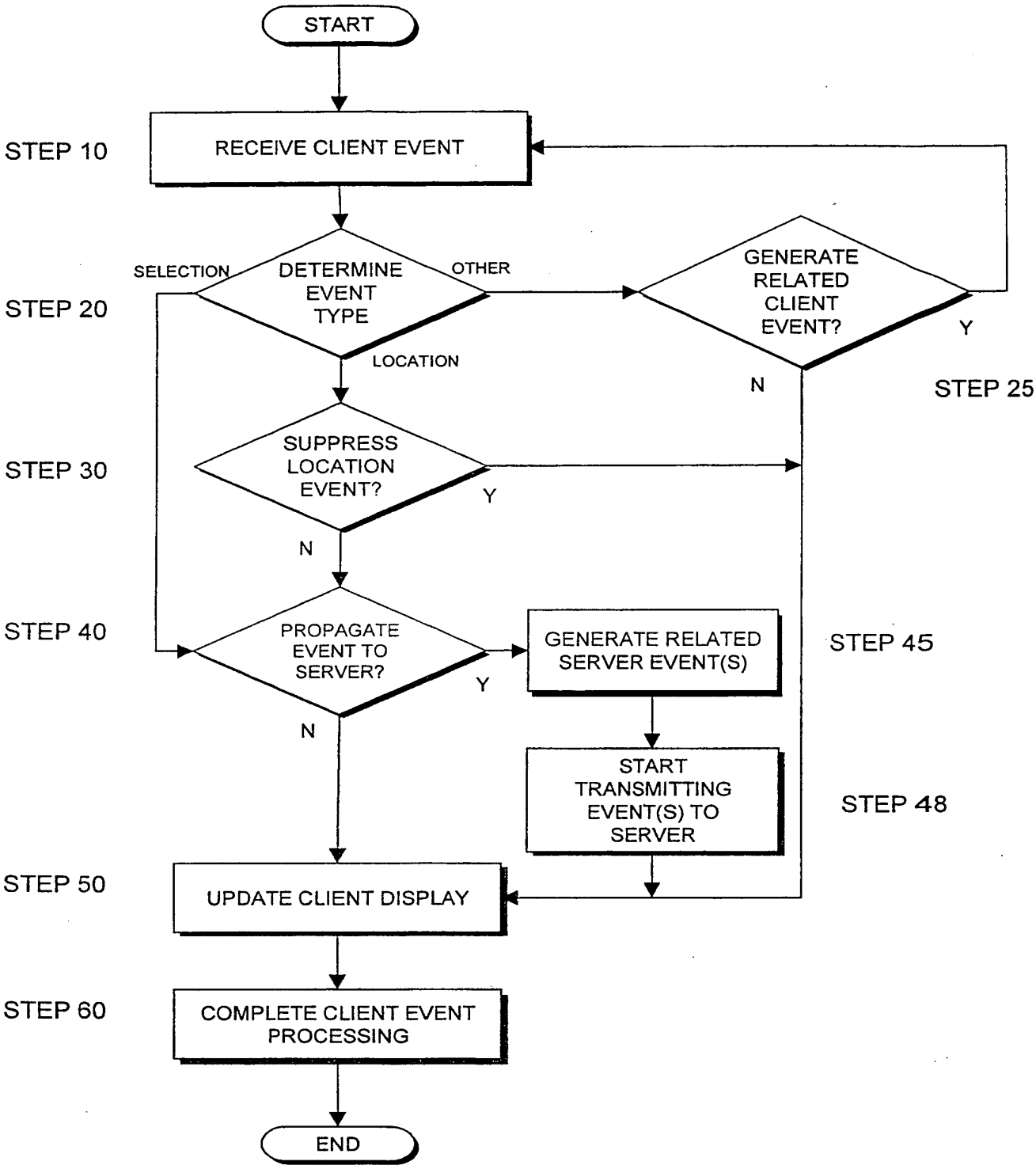

START
STEP 10
RECEIVE CLIENT EVENT
STEP 20
DETERMINE EVENT TYPE
SELECTION
OTHER
LOCATION
GENERATE RELATED CLIENT EVENT?
Y
N
STEP 25
STEP 30
SUPPRESS LOCATION EVENT?
Y
N
STEP 40
PROPAGATE EVENT TO SERVER?
Y
N
STEP 45
GENERATE RELATED SERVER EVENT(S)
START TRANSMITTING EVENT(S) TO SERVER
STEP 48
STEP 50
UPDATE CLIENT DISPLAY
STEP 60
COMPLETE CLIENT EVENT PROCESSING
END

FIG. 10

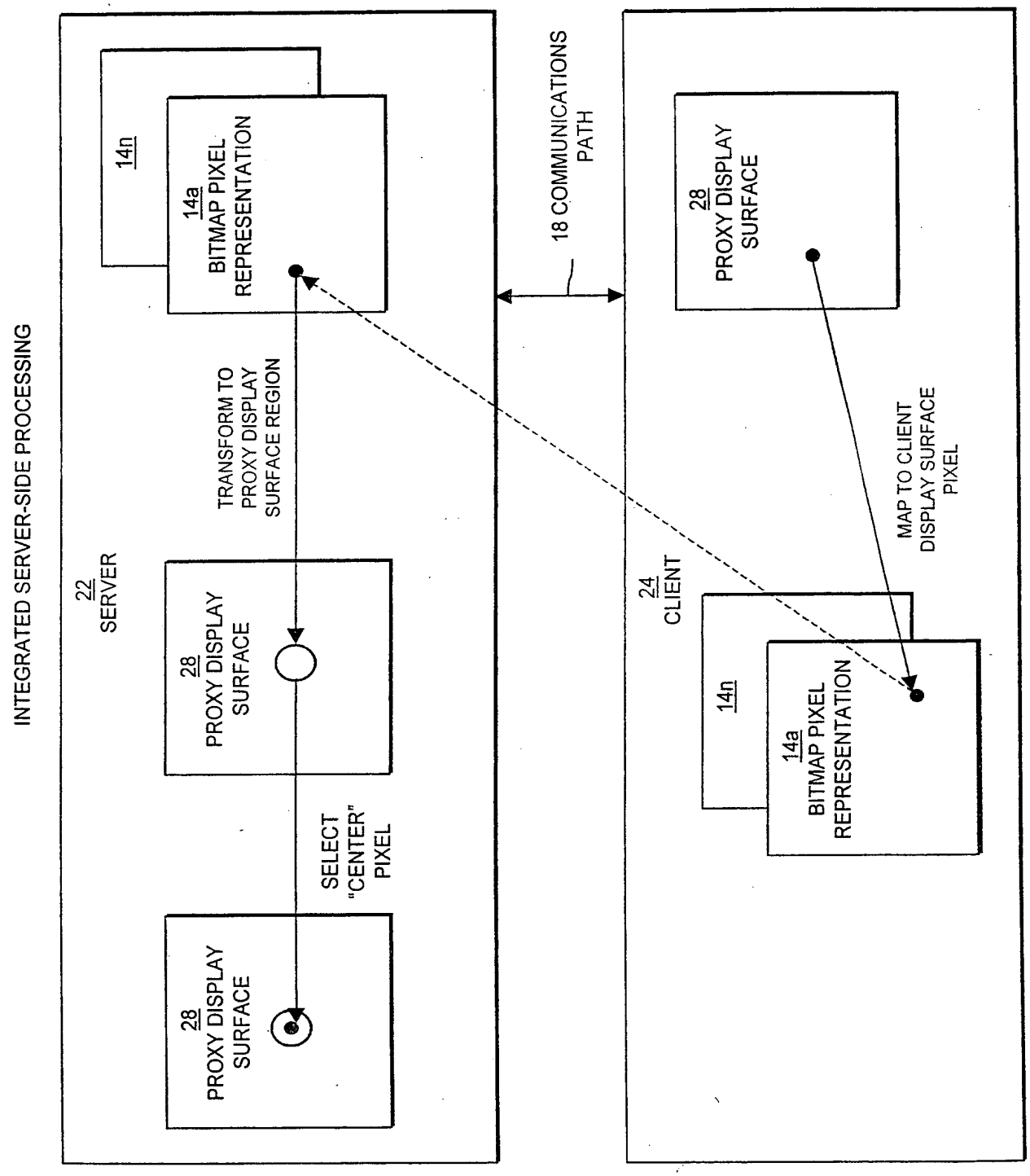

INTEGRATED SERVER-SIDE PROCESSING
22 SERVER
14n
14a BITMAP PIXEL REPRESENTATION
TRANSFORM TO PROXY DISPLAY SURFACE REGION
28 PROXY DISPLAY SURFACE
SELECT "CENTER" PIXEL
28 PROXY DISPLAY SURFACE
18 COMMUNICATIONS PATH
28 PROXY DISPLAY SURFACE
MAP TO CLIENT DISPLAY SURFACE PIXEL
24 CLIENT
14n
14a BITMAP PIXEL REPRESENTATION

FIG. 11

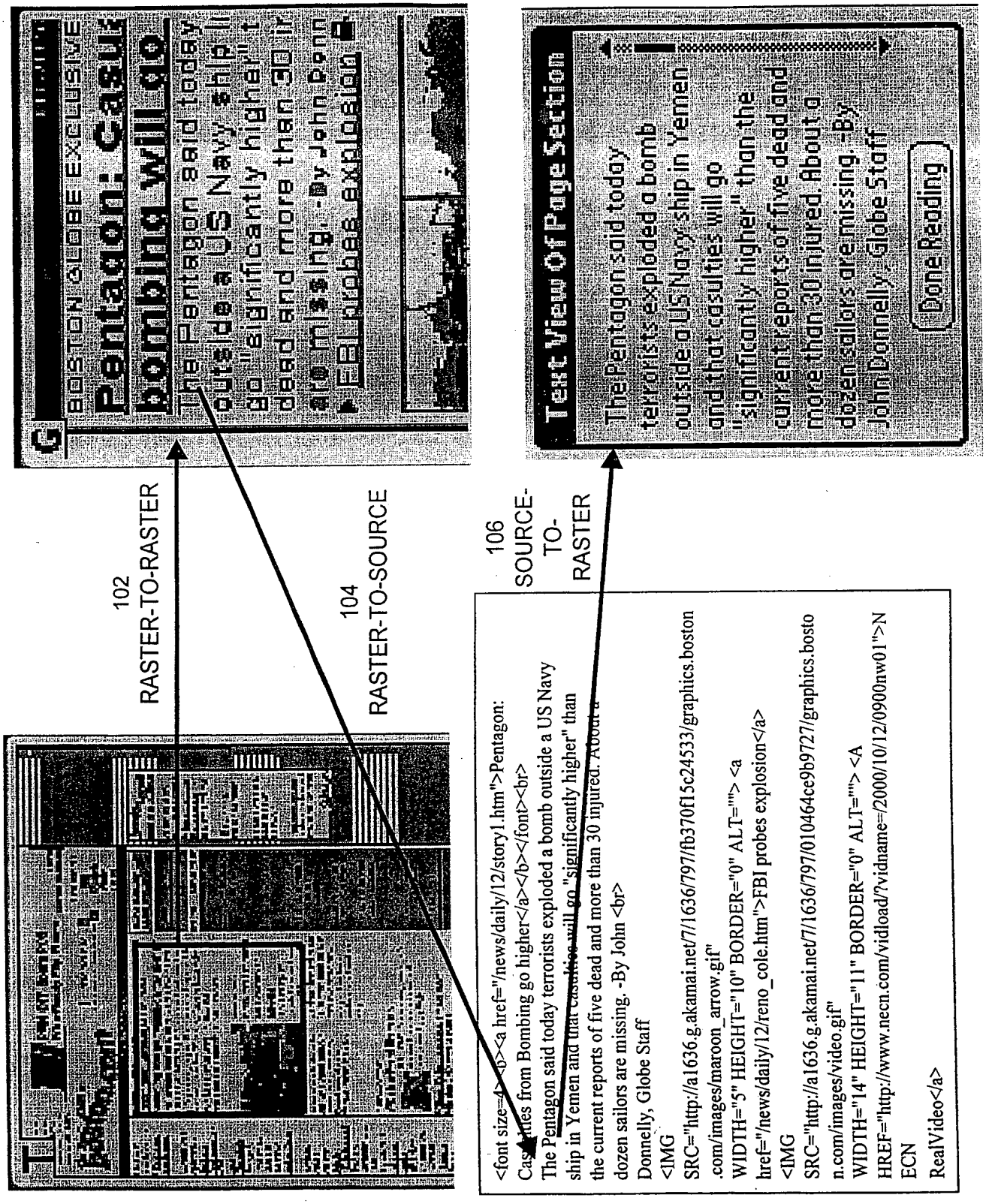


FIG. 12: CORRESPONDENCE MAP EXAMPLES

BEST AVAILABLE COPY

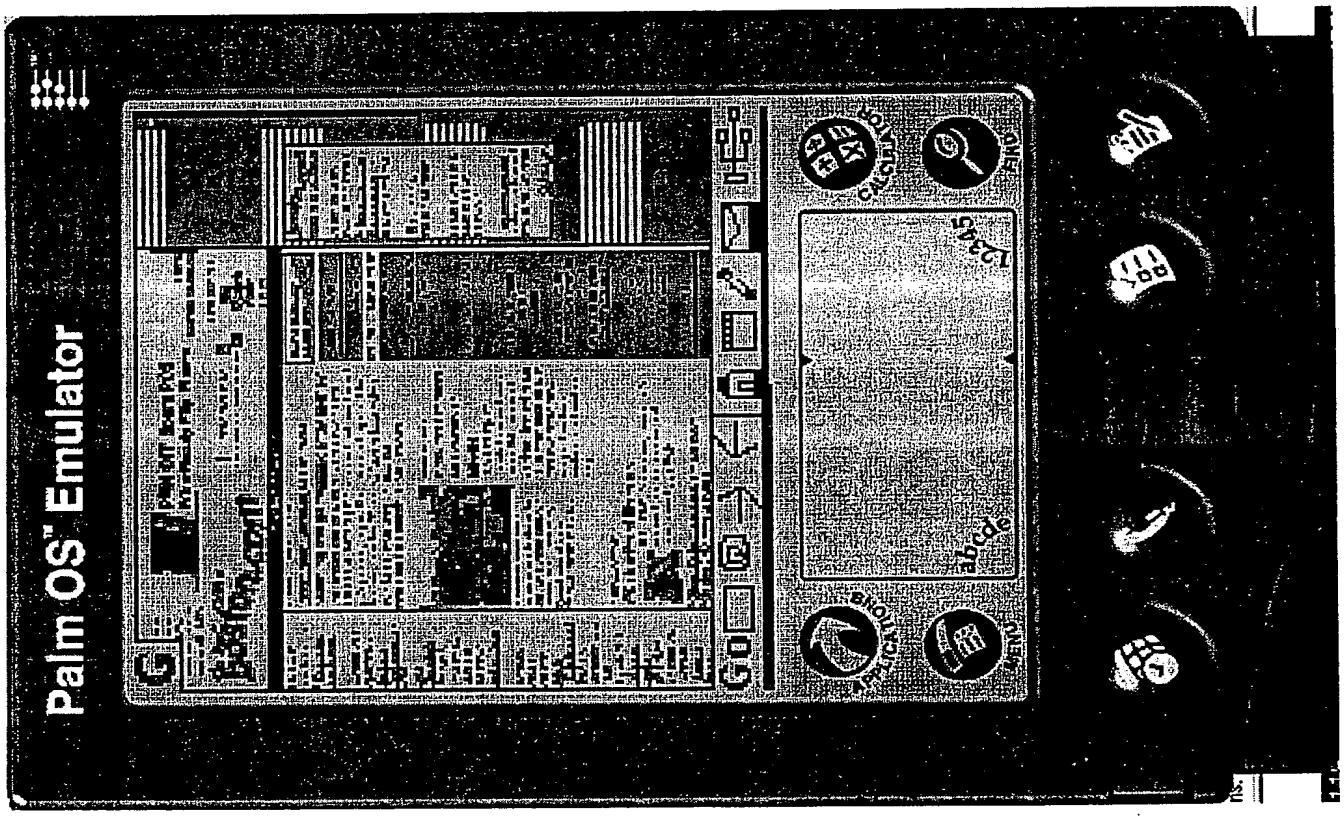


FIG. 13A:
OVERVIEW
REPRESENTATION

BEST AVAILABLE COPY

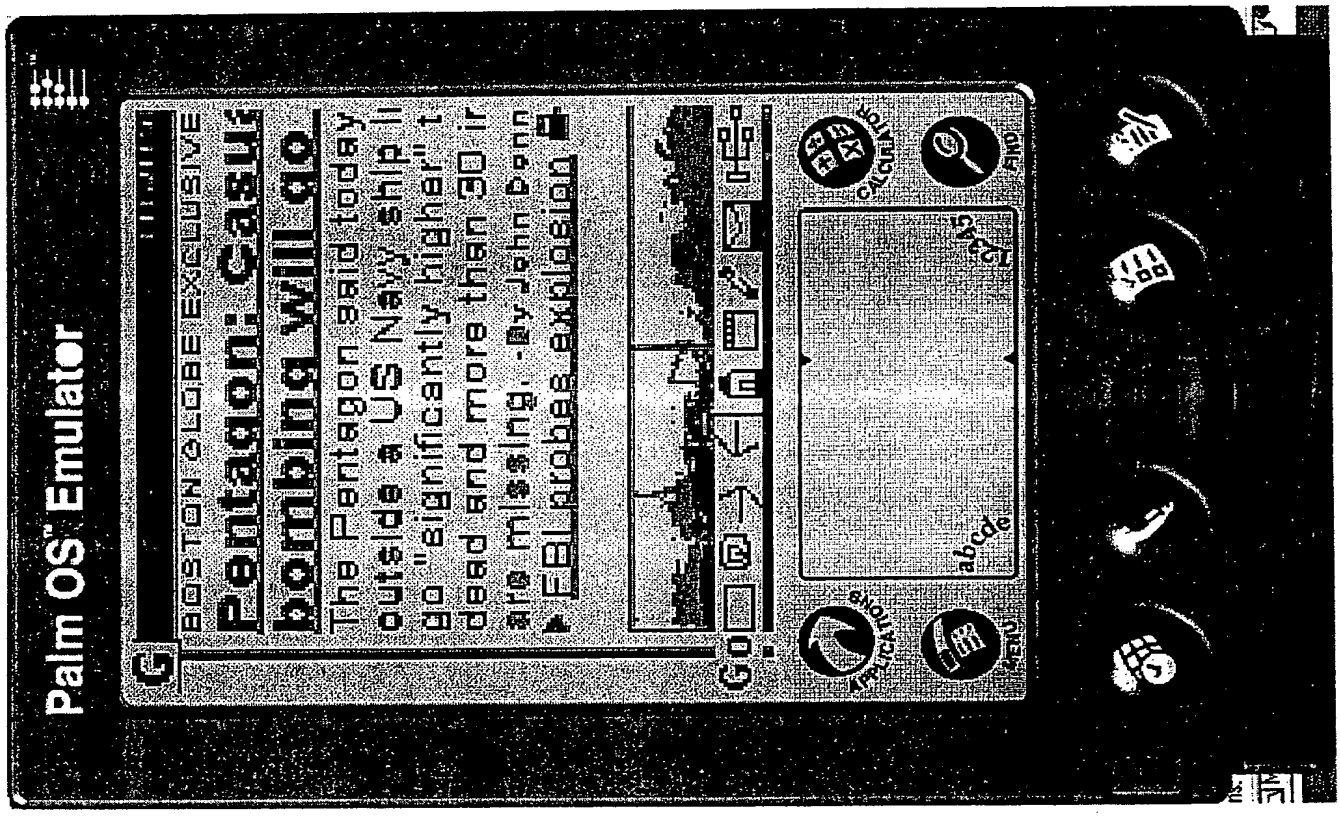


FIG. 13B: RASTERIZED DETAIL REPRESENTATION

BEST AVAILABLE COPY

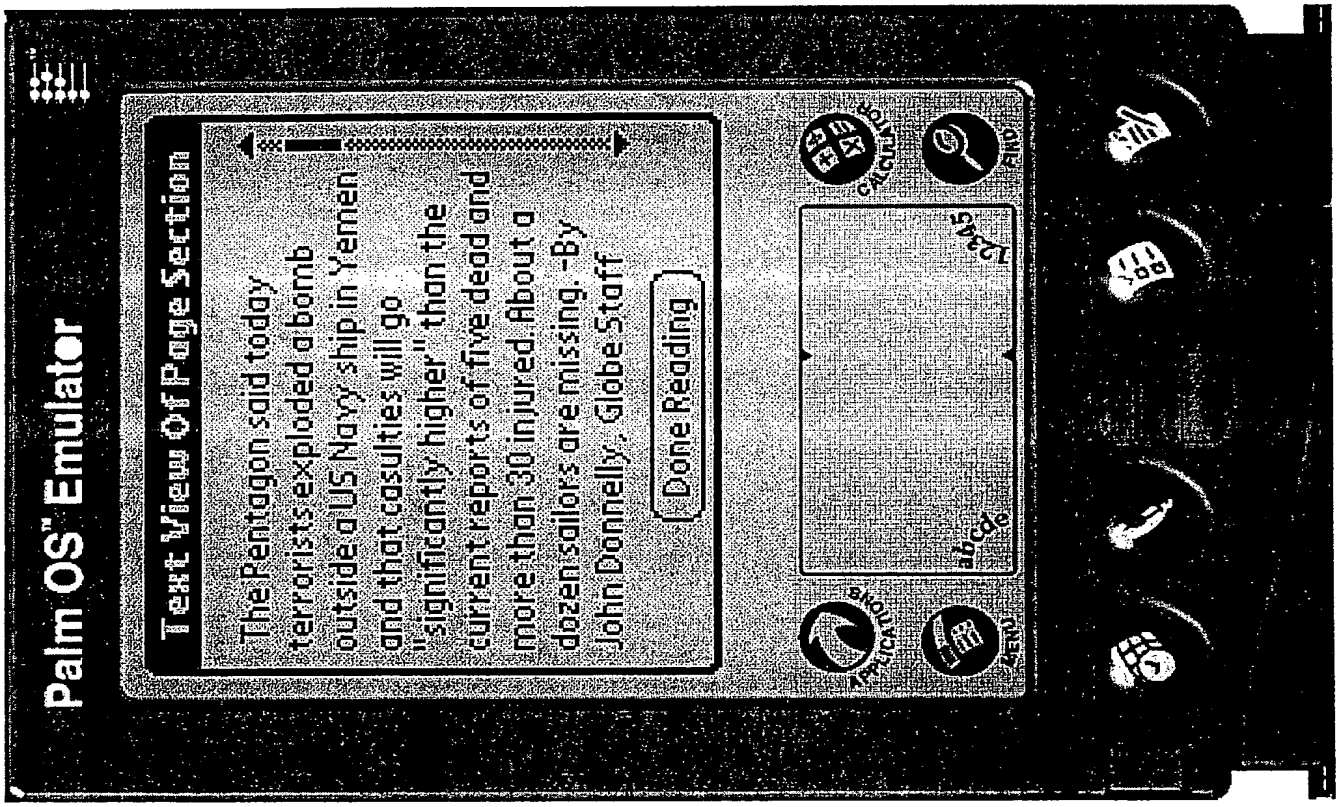


FIG. 13C: TEXT-RELATED RENDERING

BEST AVAILABLE COPY

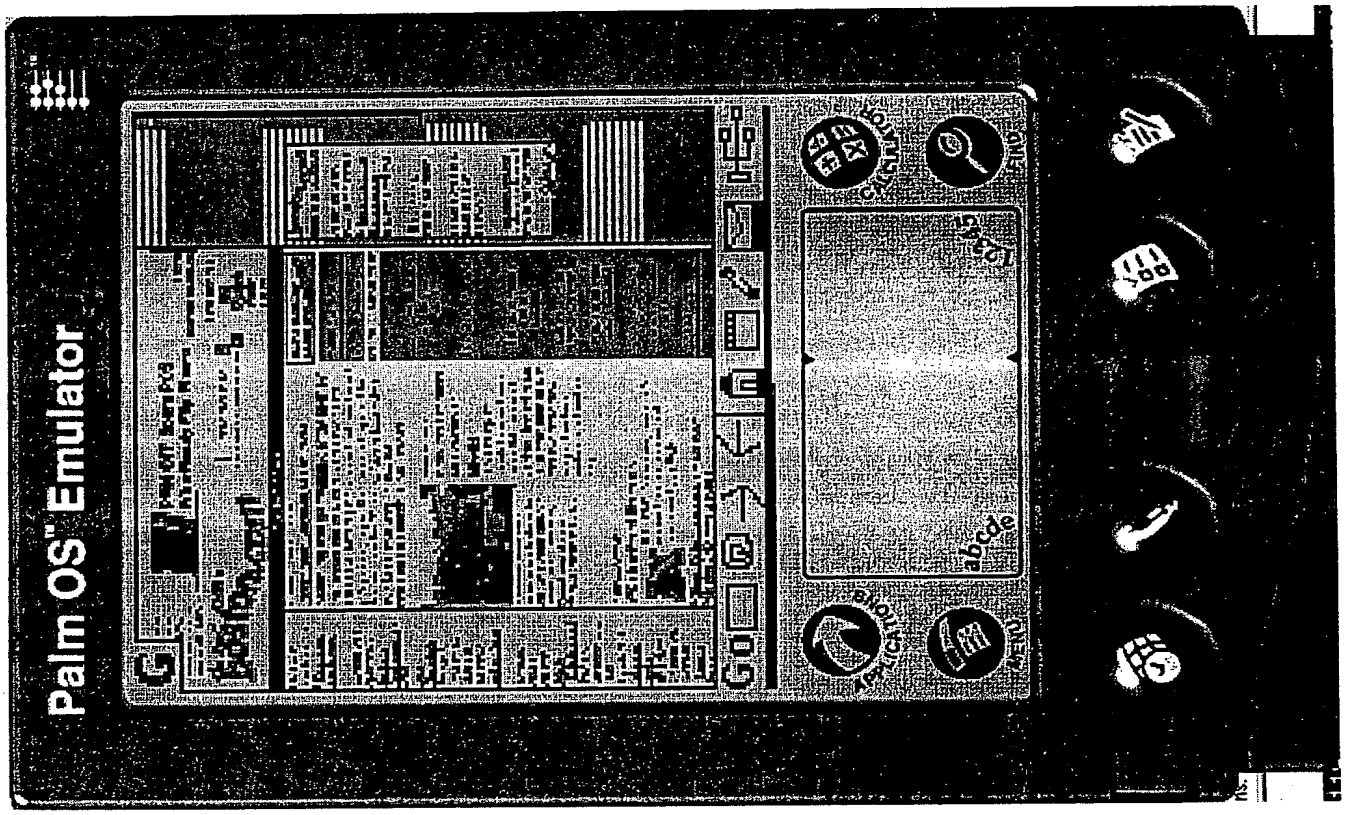


FIG. 144:
OVERVIEW
REPRESENTATION

BEST AVAILABLE COPY

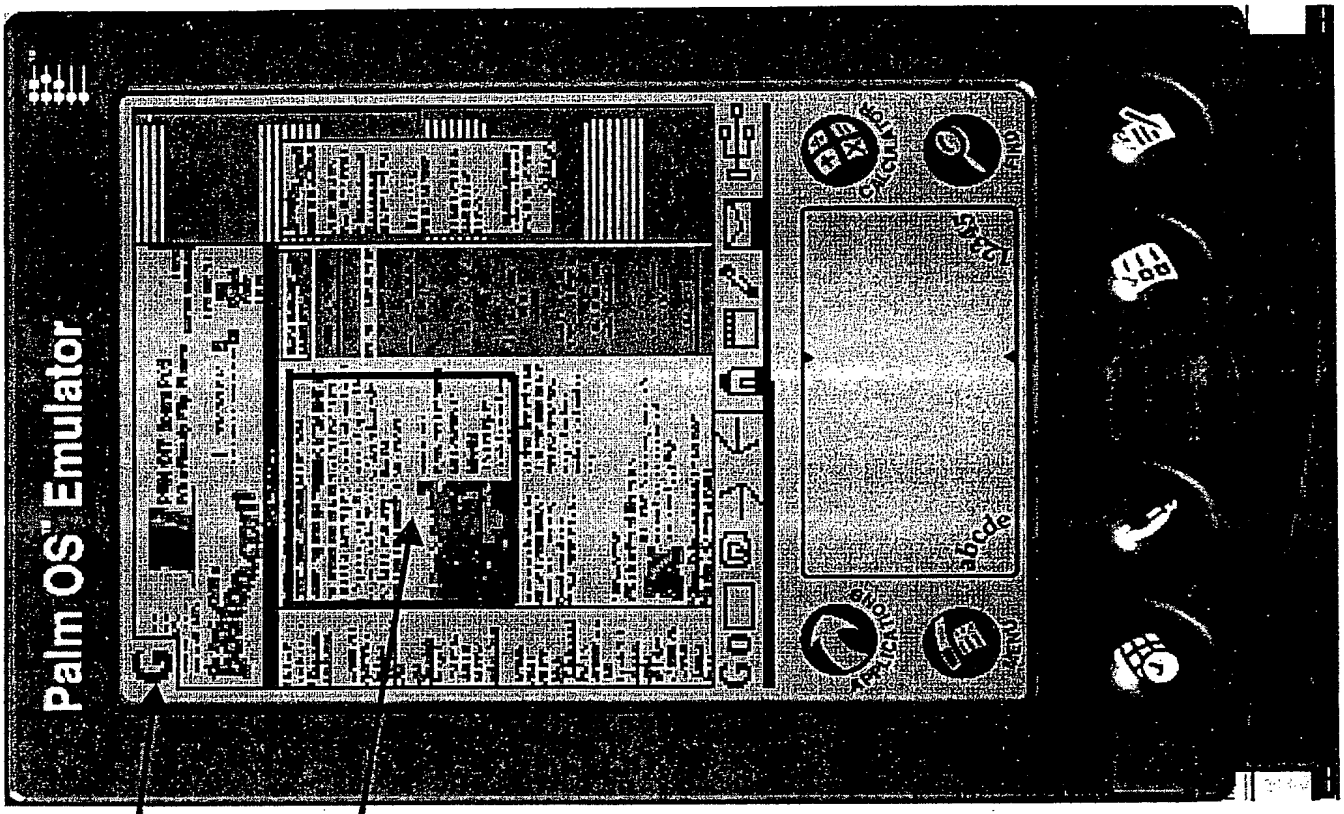


FIG. 14B:
SELECTED
REGION OF INTEREST

BEST AVAILABLE COPY

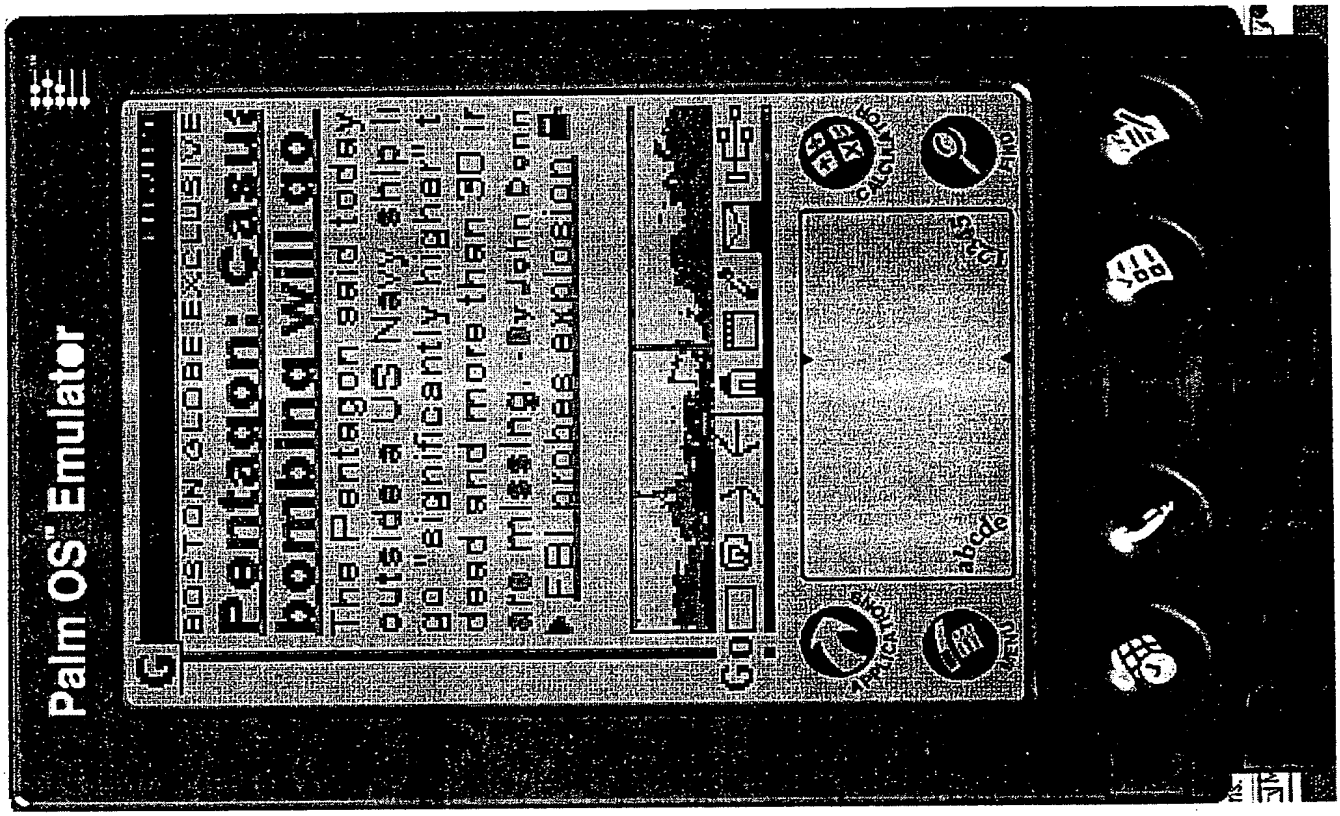


FIG. 14C.
RASTERIZED DETAIL REPRESENTATION

BEST AVAILABLE COPY

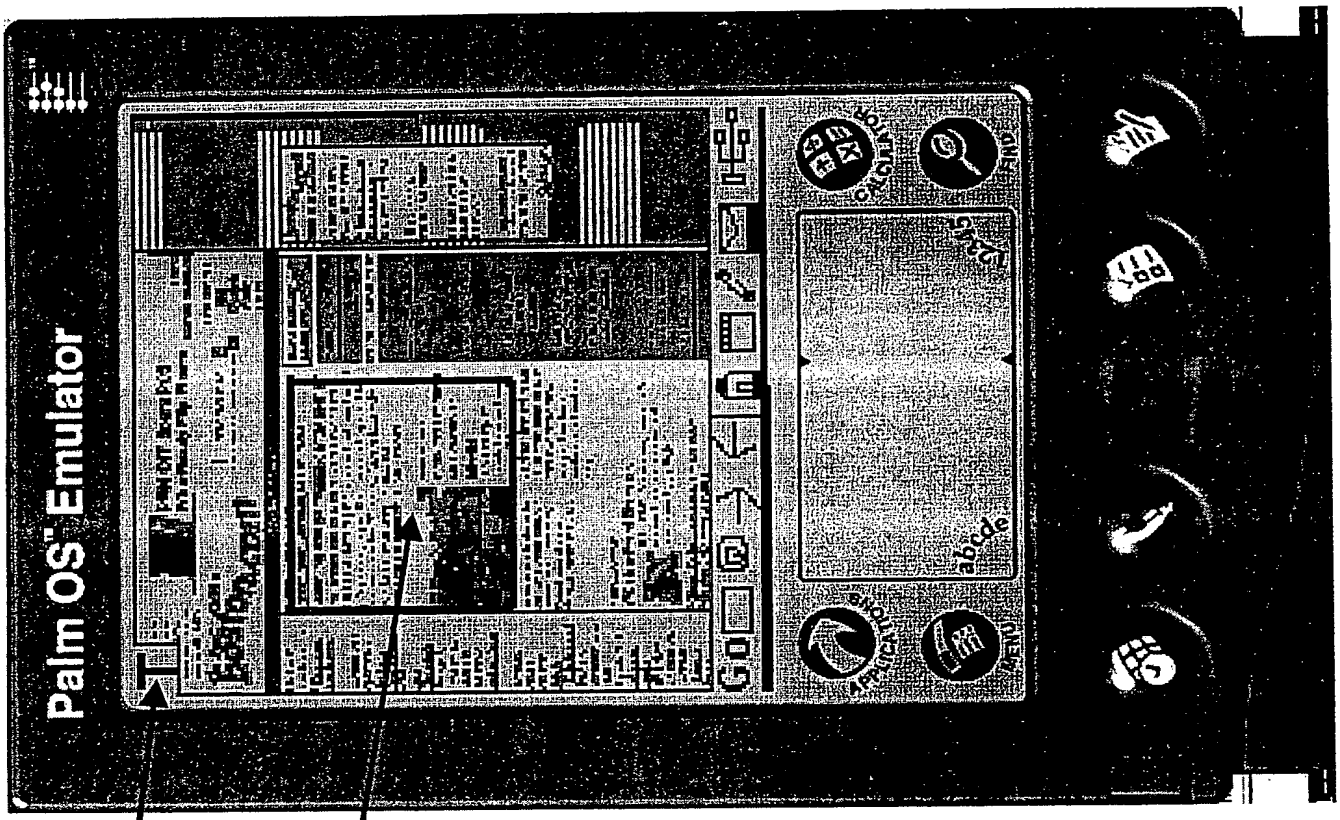


FIG. 14D: SELECTION IN TEXT MODE

BEST AVAILABLE COPY

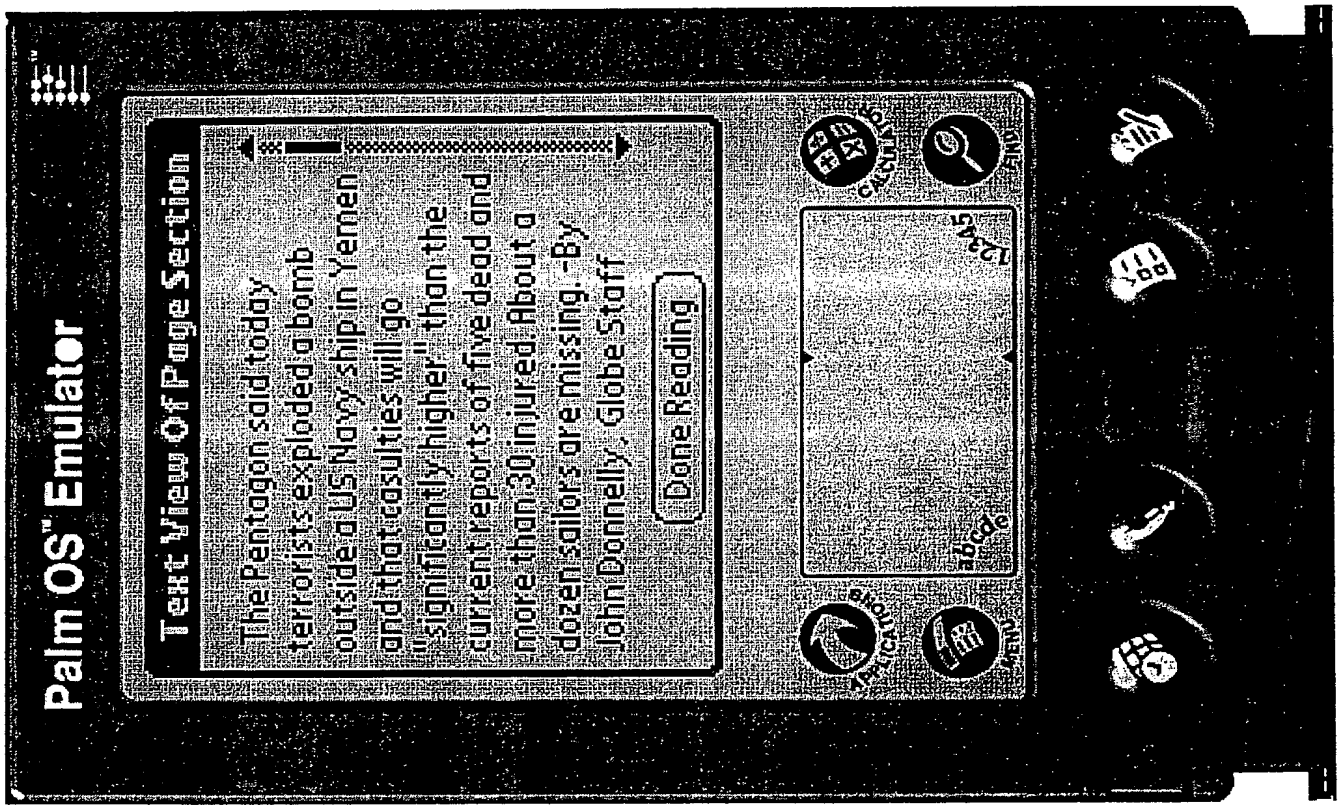
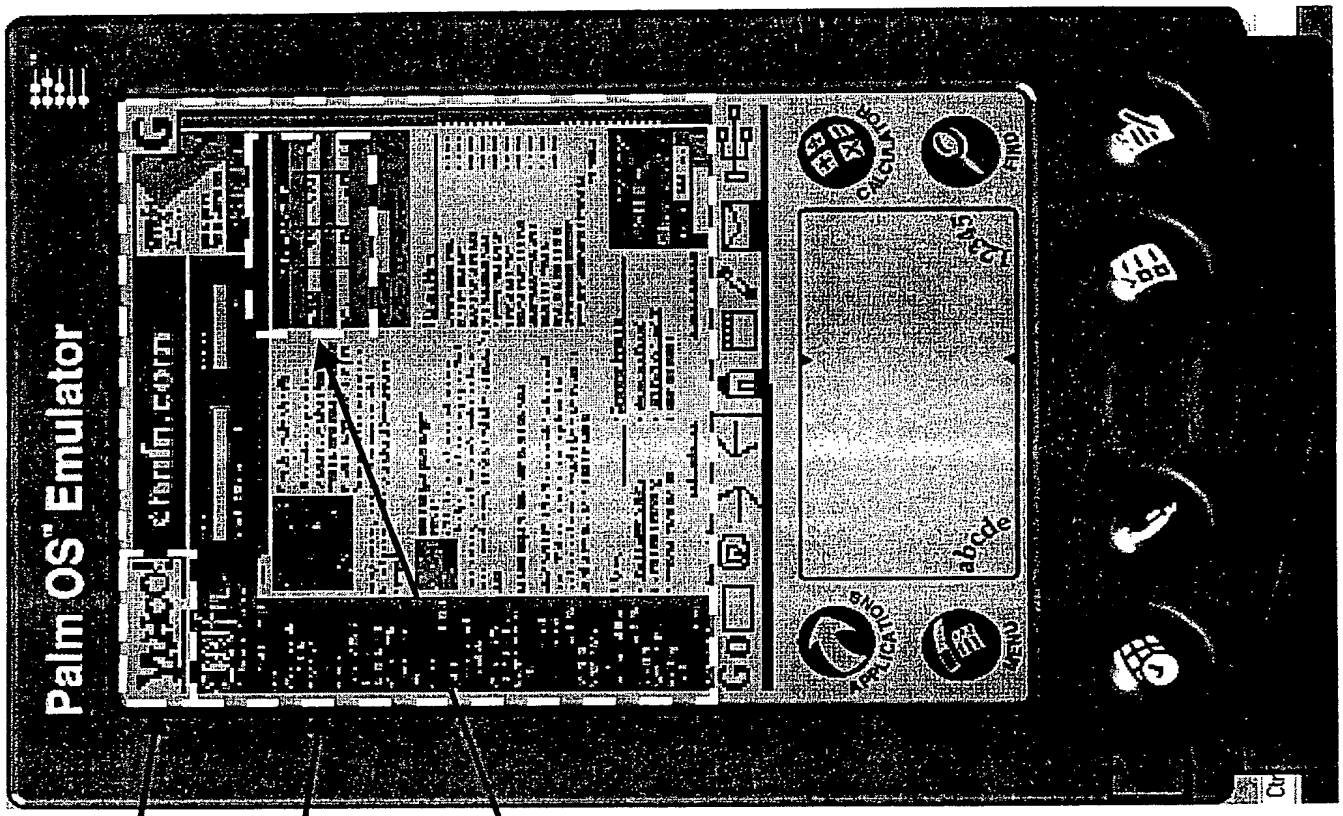


FIG. 14E: TEXT-RELATED RENDERING

BEST AVAILABLE COPY

FIG. 15:
TRANSACTION BOOKMARK
EXAMPLE

BEST AVAILABLE COPY



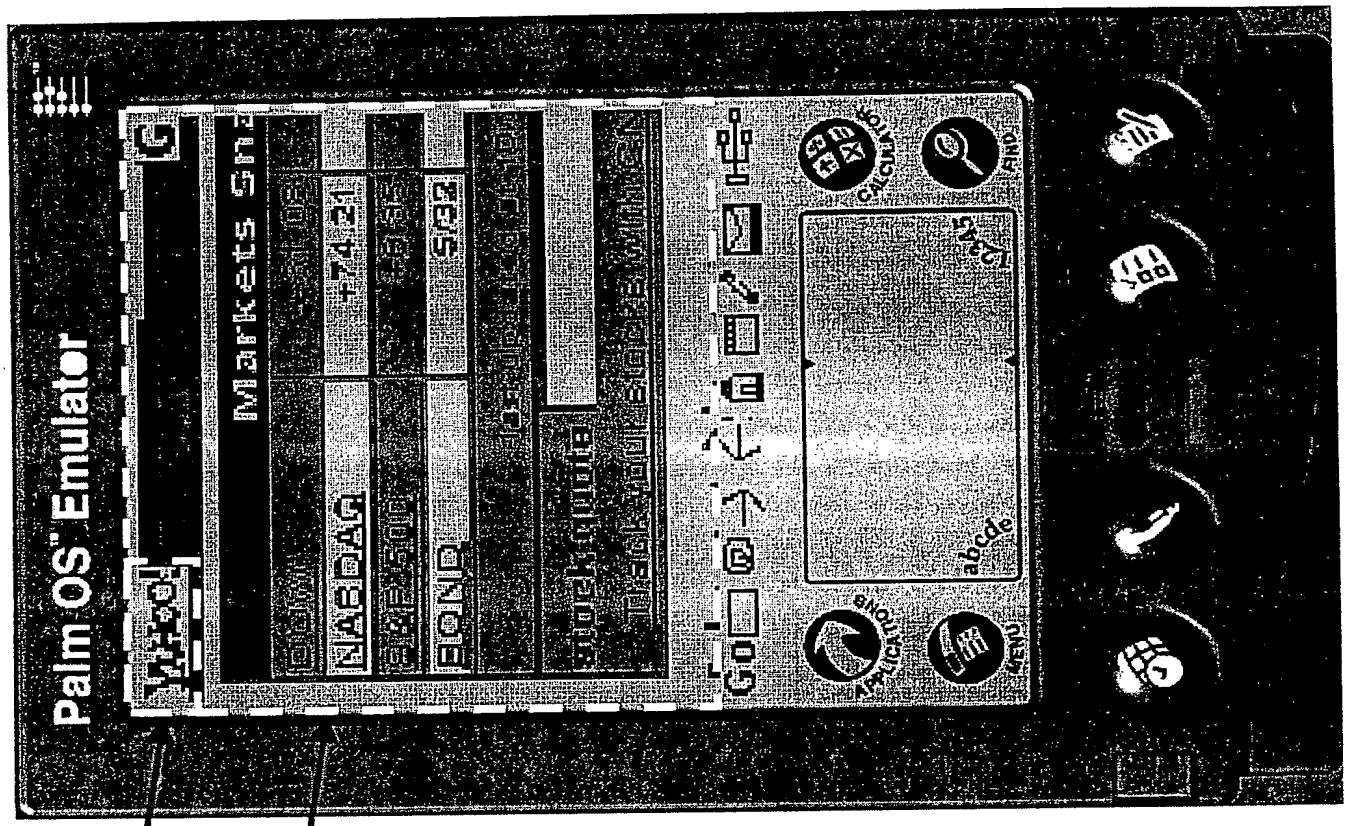
120
VISIBLE WATERMARK

122
RASTERIZED CONTENT

124
REGION SELECTED FOR
VIEWING AT DETAIL LEVEL

FIG. 16:
VISIBLE WATERMARK
EXAMPLE

BEST AVAILABLE COPY



120
VISIBLE WATERMARK

123
RASTERIZED DETAIL

FIG. 17:
VISIBLE WATERMARK
OVER DETAIL

BEST AVAILABLE COPY

FIG. 18:
ACTIVE VISIBLE WATERMARK
WITH SELECTION LIST

BEST AVAILABLE COPY

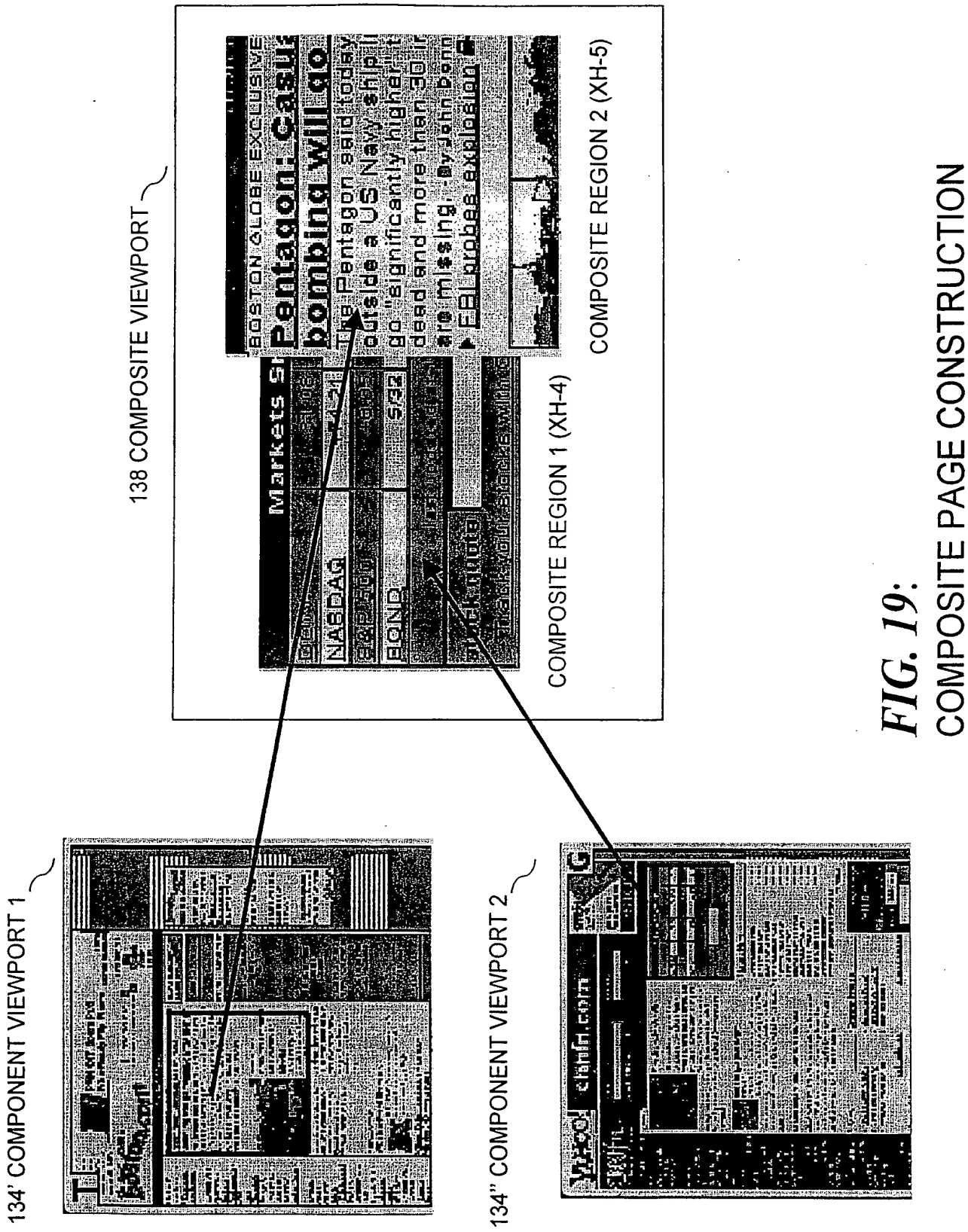


FIG. 19:
COMPOSITE PAGE CONSTRUCTION

BEST AVAILABLE COPY